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## TITLE:

## ABSORBENT ARTICLE FOR USE IN THONG UNDERWEAR

## TECHNICAL FIELD:

- 5 The invention relates to an absorbent article which is designed to be worn together with thong underwear.

Current fashion, with tight-fitting, figure-hugging clothes, has meant that it has become more common to wear so-called thongs, which have a very  
10 narrow crotch area.

As the wearing of thongs has increased, so there has also been a greater need for an absorbent article, such as a sanitary towel, an incontinence protector or a panty liner, adapted to these types of briefs.

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Conventional absorbent articles generally have a rectangular or hourglass shape. However, a rectangular or hourglass-shaped article juts out beyond the edges of the thong and takes away some of the elegance which is the actual purpose of wearing this type of underwear. Alternatively, the article  
20 has to be made narrow enough for the whole width of the article to be accommodated within the edges of the narrowest part of the thong. It has been proposed to design the absorbent articles with a shape matching thong underwear. See SE 9803981-1 and WO 97/39713, for example. SE 9803981 describes an absorbent article which is characterized by the fact that the  
25 width of the rear end portion of the article is at most 40 mm and the long sides of this end portion are essentially curved. Although such an article functions satisfactorily in terms of discretion, it has proven difficult to get the article to fit securely in place in the thong during use.

30 Thus, one of the most important problems to be solved in absorbent articles for these types of briefs is the fastening to the briefs, since the crotch area of the thong is very small. It is also important, for several reasons, for the article

to fit exactly correctly in the thong. On the one hand, incorrect positioning of the article means that the discretion and user comfort suffers, and, on the other hand, it is of the greatest importance that the article, on account of its small surface area, should be placed in such a way that it is able to take up  
5 and absorb all the body fluids eliminated. Secure and correct fastening of the article is therefore also important from the point of view of leakage.

US Des. 394,503 discloses an article with a shape which is intended to fit in thong underwear and which is additionally provided with protruding side tabs.  
10 The tabs in this model have a rectangular shape with sharp edges. An article with flaps of this kind will cause discomfort because the sharp edges of the tabs will chafe or cut into the wearer during use.

US 5,713,886 describes panty liners intended to be worn in thongs and  
15 provided with fastening tabs. The fastening tabs are located both on the first end portion, which is the wider portion of the article, and also on the second end portion, which is the narrower portion of the article. The disadvantage of an article according to this patent is that there are a large number of tabs for the wearer to fasten to the briefs and that two of these tabs are placed on the  
20 first end portion of the article, which reduces the adaptability to different shapes and sizes of thong. A further disadvantage of an article from US 5,713,886 is that the tabs of the wider end portion will be visible during use, which takes away from the advantage of wearing thongs.

## 25 BRIEF DESCRIPTION OF THE INVENTION:

An article of the type discussed in the introduction, in which the problems associated with previously known articles of this kind are essentially eliminated, is characterized, according to the invention, by the fact that at  
30 least the second, rear, end portion has flexible fastening tabs for fastening of the article in the thong.

According to a preferred embodiment, the fastening tabs have an essentially rounded contour. According to further embodiments, the fastening tabs are provided with fastening means in the form of fastening adhesive or some type of mechanical fastening arrangement, for example hook-and-loop fasteners, snap fasteners, friction-type fasteners or the like. It is also possible to use combinations of mechanical and adhesive fastening members. According to one embodiment, the fastening tabs are secured against each other. According to a further preferred embodiment, the fastening tabs comprise a soft material, such as a nonwoven, foamed plastic, or the like.

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To allow the article to be secured by the front edge to the briefs too, the front end portion is advantageously provided with a fastening arrangement. Such a fastening arrangement can comprise fastening adhesive or a mechanical fastening arrangement, for example, a friction coating, hook-and-loop materials, gripping members, snap fasteners or the like. The fastening arrangement on the front portion of the article can have a special shape, for example oval, rectangular, lines or the like.

To facilitate correct positioning of an article of the type discussed in the introduction, the article, in a preferred embodiment, can have a raised portion. By this means, it is also possible to achieve an increased absorption capacity of the article and increased security against leakage. According to a further preferred embodiment, the article has inwardly curved side edges, in order to better follow the shape of the leg edges of the thong.

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According to one embodiment, the width of the rear end portion is 15 to 40 mm and preferably 18 to 30 mm. To fit well into thongs, the length of the article is advantageously 150 mm or less.

30 Liquid barriers can also be arranged between the absorbent part of the article and the fastening tabs. Such liquid barriers can consist, for example, of liquid-blocking welds, compressions, liquid-repelling material such as wax,

plastic or the like. It is also possible for the fastening tabs to be made of a hydrophobic material such as a hydrophobic nonwoven, plastic or the like.

According to one embodiment of the invention, the fastening tabs are formed from separate pieces of material wherein each fastening tab exhibits an edge portion which substantially coincides with a corresponding edge portion on the long side and wherein the fastening tabs and the edge portions are attached to each other within the coinciding edge portions with the fastening tabs being oriented towards each other with the non-attached edge portions extending in over the absorption body on the underside, i.e. the side of the article which, during use, is intended to be facing away from the user.

According to one embodiment of the invention, the rear end portion is provided with a fastening arrangement for fastening in the thong.

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#### DESCRIPTION OF THE INVENTION:

According to the invention, the above problems are solved by the fact that the absorbent article is constructed with its rear portion so arranged that the article is not visible from outside when placed in thong underwear, and that at least this portion is provided with fastening tabs.

It is advantageous for the absorbent article to follow the edge of the briefs so that the available absorption surface is as great as possible. An article which is as wide as possible is also important from the point of view of leakage. The risk of side leakage from the briefs and also of staining of these briefs is minimized when the article is adapted to the shape of the briefs. The absorbent article according to the invention therefore has long sides which follow the contours of the briefs in the crotch area. An article which closely follows the shape of the briefs will also be very well concealed during use.

It is very important that an article having a smaller absorption surface than a conventional absorbent article, which is the case of an article according to the present invention, fits correctly and securely in place in the briefs, since an article which has such a small absorption surface and which moves in the  
5 briefs is of no use from the point of view of leakage. According to the invention, the fastening of the article is ensured by means of the fact that the article has long sides which follow the contour of the briefs in the crotch area and which are provided with fastening tabs.

10 In a preferred embodiment of the invention, the fastening tabs have a rounded contour in order to avoid the chafing and discomfort to the wearer which can be caused by fastening tabs which angled edges. It is also possible to further enhance the comfort of the article by making the fastening tabs from a soft, comfortable material such as a nonwoven, a foamed plastic,  
15 or the like. To hold the absorbent article in place in the thong, it is important for the fastening tabs to be secured either to each other or to the thong. This is best done by providing the fastening tabs with some form of fastening arrangement, for example adhesive, hook-and-loop, snap fasteners, friction-type fasteners, or the like.

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To provide maximum protection against leakage, it is preferable that the first end portion of the article can also be secured correctly in the briefs. To give the user as wide a choice as possible as regards positioning of the article in the briefs, a fastening means comprising fastening adhesive or a mechanical  
25 fastening arrangement are preferred. This gives the user an article which is easy to secure in the briefs and which can also be moved by a simple manoeuvre, if one feels the first positioning was not correct. To further simplify matters for the user, this fastening arrangement can also have a special shape so that the user can, for example, avoid having fastening  
30 adhesive across the entire reverse side of the product.

Many tests have shown that, in order to reduce leakage when using an absorbent article, it is useful for the article to come into contact with the liquid as near as possible to the body. A preferred way of doing this is to provide the article with a raised portion. This also increases the absorption capacity.

- 5 The raised portion additionally acts as a positioning member.

It has surprisingly been found that the crotch width of the majority of thongs is more or less identical. Measurements have also shown that a width of absorbent article not exceeding 40 mm is in most cases sufficiently narrow to  
10 be concealed by the thong.

The width is preferably 15 to 40 mm.

It has been found that it is not necessary for the whole article to be of a  
15 defined, very narrow width, since the front part of most thongs on the market is sufficiently wide to permit use of an article of normal width with more or less any contour on the long sides. This means that that part of the article which is placed towards the front on the user can be structured more freely depending on the requirements in respect of absorption capacity.

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Consequently only the end portion intended to be placed rearwards on the user and fit in the narrow part of the thong has to be structured with a maximum width and a special contour of the long sides. This portion of the article will in the following be described as the rear, or the second end  
25 portion. The part of the article which can be structured more freely is referred to hereinafter as the front or the first end portion. The two end portions do not necessarily divide the article into two equal parts in the longitudinal direction. The first end portion is preferably 60 to 170 mm long and the second end portion is preferably 30 to 90 mm long. The entire length of the article is  
30 consequently 90 to 260 mm.



In order to reduce the risk of side leakage, it is advantageous if no direct connection exists between the cover or the absorption body of the article and the fastening tabs. By arranging fastening tabs in the form of separate, discrete pieces of material on the article, the join between the tabs and the rest of the article will form a kind of leakage barrier, whereby all fluid transport paths to the fastening tabs will be cut off. Moreover, when the fastening tabs consist of separate pieces of material, the composition and other properties can be chosen freely, independently of the materials forming the cover of the article. Furthermore, it is possible to produce the articles with negligible material waste when the articles are cut out. Due to the fact that the fastening tabs are formed from separate pieces of material which are arranged and attached to the long sides of the article in a manner with the fastening tabs extending towards each other in over the underside of the article, i.e. on the side of the article which during use is intended to be facing away from the user, it is possible to provide an article wherein the fastening tabs, in their initial configuration, are not directed outwardly from the article. This implies that the articles are easy to package since the tabs do not require the provision of a special folding step.

A further advantage by attaching the separate pieces of material or the tabs on the side of the article which during use is intended to be facing away from the user is that the common edge portions of the article and the side tabs can be shaped to fit the curved leg edges of the thong. This implies that the tabs will not wrinkle or deform in other ways as a result of the fastening in the thong something which usually happens with side tabs which are folded around the edges of a pair of briefs. Further, when such an article is arranged in the thong, the leg edges of the thong are guided in between the tabs and the cover material on the underside of the article, i.e. the side of the article which faces away from the user. During use, the article is curved in the longitudinal direction in order to conform to the body of the user. Thereby, tensional forces are created in the tabs, causing these to press against the cover material on the underside of the article and clasping the leg edges of

the thong between the tabs and the remaining parts of the article. In order to obtain maximum such "self locking", it is advantageous if the fastening tabs exhibit a certain rigidity, i.e. are more rigid than each of the covering layers and, preferably, that the rigidity of the fastening tabs exceeds the combined  
5 rigidity of the covering materials. By "self-locking" of the article in the briefs, the use of particular fastening means such as adhesive strips or the like may be avoided. Naturally, this is a great advantage since it considerably simplifies the handling of the article both when applying it to the thong and when removing the article from the thong after use. Moreover, the production  
10 of the articles is simplified and the production costs are reduced if fastening adhesive and accompanying protection sheets can be dispensed with.

Thus, due to the fact that the side tabs are attached to the edge portions of the article such that the side tabs, without being folded, are originally directed  
15 in over the underside of the article, a number of advantages can be obtained.

It is not necessary that the attached edge portions of the fastening tabs completely coincide with the long sides of the article. It can, for instance, be suitable to attach the fastening tabs at a distance of up to 7 mm from the long  
20 sides of the article. Further, it is possible to design the fastening tabs with an edge contour somewhat deviating from the edge contour of the long sides of the article.

In one embodiment of the invention, a fastening means is arranged at the  
25 rear end portion of the article in order to prevent the rear end portion to move in relation to the thong.

#### BRIEF DESCRIPTION OF THE FIGURES:

30 The invention will be described in more detail below with reference to the illustrative embodiments which are shown in the drawings.

- Figure 1 shows a sanitary towel according to the invention, seen from above.
- 5 Figure 2 shows a section along the line II-II through the sanitary towel in Figure 1.
- Figure 3 shows a panty liner according to the invention, seen from above.
- 10 Figure 4 shows a section along the line IV-IV through the panty liner in Figure 3.
- Figure 5 shows an article according to an alternative embodiment of the invention.
- 15 Figure 6 shows a section along the line VI-VI through the article in Figure 5.
- Figure 7 shows an article according to an alternative embodiment of the invention, seen from underneath.
- 20 Figure 8 shows an article according to an alternative embodiment of the invention, seen from underneath.
- Figure 9 shows an article according to an alternative embodiment of the invention, seen from underneath.
- 25 Figure 10 shows an article according to an alternative embodiment of the invention, seen from underneath.
- 30 Figure 11 shows an article according to an alternative embodiment of the invention, seen from underneath.

Figure 12 shows a sanitary towel according to a further alternative embodiment of the invention, seen from underneath.

5 Figure 13 shows a section along the line XIII-XIII through the sanitary towel in Figure 12.

Figure 14 shows a panty liner according to a further alternative embodiment of the invention, seen from underneath.

10 Figure 15 shows a section along the line XV-XV through the panty liner in Figure 14.

#### MORE DETAILED DESCRIPTION OF FIGURES AND EMBODIMENTS:

15 Figure 1 shows a sanitary towel 1 according to one embodiment of the invention.

The sanitary towel 1 has an essentially elongate shape with a longitudinal direction and a transverse direction and it has two long sides 2,4, two short  
20 sides 6,8, a first end portion 10 and a second end portion 12, and a longitudinal centre line 14, running in the longitudinal direction of the sanitary towel, and a transverse centre line 16 running in the transverse direction of the sanitary towel. Longitudinal centre line signifies a line which runs in the longitudinal direction of the sanitary towel and is arranged at equal distances  
25 from the long sides 2,4 of the sanitary towel. Transverse centre line signifies a line arranged in the transverse direction of the sanitary towel and at equal distances from the short sides 6,8 of the sanitary towel. The sanitary towel 1 has an upper side 18, intended to be directed towards the wearer during use, and an underside 20, intended to be directed away from the wearer during  
30 use. The sanitary towel additionally has fastening tabs 26,28 intended to secure the article in the thong.

The sanitary towel 1 comprises a liquid-permeable surface layer 22 arranged on that side of the sanitary towel 1 intended to be directed towards the wearer during use, namely the upper side 18, and a liquid-barrier backing layer 24 arranged on that side of the sanitary towel intended to be directed away from the wearer during use, namely the underside 20. Arranged between the surface layer 22 and the liquid-barrier backing layer 24 there is an absorbent body 30. The surface layer 22 and the backing layer 24 are joined in a seam around the absorbent body 30.

- 10 The surface layer 22 can be of any conventional material, for example a nonwoven, a perforated plastic film, or a laminate of a perforated plastic film and a nonwoven.

The absorbent body 30 is preferably made of cellulose pulp. This can be originally in the form of rolls, bales or sheets which, upon manufacture of the sanitary towel, are dry-defibred and converted in fluffed form to a pulp web, sometimes with admixture of so-called superabsorbents, which are polymers having the ability to absorb several times their own weight of water or body fluid. An alternative to this is to dry-form a pulp web as described in WO 94/10956. Examples of other absorption materials that can be used are various types of natural fibres such as cotton fibres, peat, or the like. It is of course also possible to use absorbent synthetic fibres, or mixtures of natural fibres and synthetic fibres. The absorbent body 30 can also contain further components such as shape-stabilizing members, liquid-dispersing members, or binders, for example thermoplastic fibres which have been heat-treated in order to hold short fibres and particles together in a coherent unit. It is also possible to use different types of absorbent foam materials in the absorbent body.

- 30 The liquid barrier layer 24 or backing layer is made of a liquid-impermeable material. Thin, liquid-tight plastic films are suitable for this purpose, although it is also possible to use material which is originally liquid-permeable, but

which has been provided with a coating of plastic, resin or other liquid-tight material. In this way, leakage of liquid from the underside of the absorbent article is prevented. The barrier layer 24 can thus be made of any desired material which satisfies the requirement for liquid impermeability and has  
5 sufficient flexibility and skin compatibility for the intended purpose. Examples of materials which are suitable as barrier layers are plastic films, nonwovens and laminates of these. The plastic film can be, for example, polyethylene, polypropylene or polyester. The barrier layer can alternatively be made of a laminate of a liquid-impermeable plastic layer, directed towards the  
10 absorbent body, and a nonwoven directed towards the user's underwear. Such a construction gives a leaktight barrier layer having a textile feel.

An acquisition layer 32 can be arranged between the surface layer 22 and the absorbent body 30. The purpose of the acquisition layer 32 is to draw  
15 liquid into the sanitary towel and convey it down to the absorbent body 30. The acquisition layer 32 can be made of a low-density nonwoven material.

Figure 2 shows a cross section through the sanitary towel 1 in Figure 1 along the line II-II. On the underside 20 of the sanitary towel, that is to say on the  
20 liquid barrier layer 24, there are fastening members 34 in the form of pressure-sensitive adhesive strips arranged parallel to the longitudinal centre line of the sanitary towel. Alternatively, the fastening member can have another shape, for example oval, rectangular, lines points or the like. Arranged over the adhesive 34 there is a releasable protective layer 38. The  
25 protective layer 38 is removed by the user before placing the sanitary towel in the underwear. Other fastening members such as hook-and-loop, snap fasteners, friction material, gripping members or the like can of course also be used.

30 Figure 1 shows that the long sides 2,4 of the sanitary towel have an essentially arcuate shape. The arcuate shape is such that the long sides 2,4 of the sanitary towel curve in towards the longitudinal centre line 14 of the

sanitary towel. The long sides 2,4 of the article have two fastening tabs 26, 28 on the rear end portion. These fastening tabs 26, 28 have an essentially rounded contour and they can have the same combinations of material as the rest of the sanitary towel. It is also possible for the fastening tabs 26, 28 to consist solely of a liquid barrier layer 24 together with a surface material 22. The fastening tabs 26, 28 can also partially comprise a soft material, such as a nonwoven, a foamed plastic or the like. It is advantageous for the material of the fastening tabs to be hydrophobic, so that liquid is prevented from passing from the absorbent body 30 to the fastening tabs 26, 28.

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Figure 3 shows a panty liner 36 according to one embodiment of the invention. The panty liner 36 has a surface layer 22, a barrier layer 24, an absorbent body 30 and fastening tabs 26, 28. The absorbent body can be an air laid cellulose pulp body. The surface layer 22, the barrier layer 24, and the fastening tabs 26, 28 can be made of the same materials as has been described for the surface layer 22, the barrier layer 24, and the fastening tabs 26, 28 in the embodiment of the sanitary towel according to Figures 1-2.

Figure 4 shows a section along the line IV-IV through the panty liner in Figure 3. On the underside 20 of the panty liner, that is to say on its liquid barrier layer 24, there are fastening members in the form of a layer 34 of pressure-sensitive adhesive covering the entire surface. Alternatively, in the same way as in the sanitary towel in Figures 1 and 2, the fastening member can have another shape, for example oval, rectangular, lines, points or the like. Arranged over the adhesive layer 34 there is a releasable protective layer 38. The protective layer 38 is removed by the user before placing the sanitary towel in the underwear. Other fastening members such as hook-and-loop, snap-fasteners, friction material, gripping members or the like are of course also possible.

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Figure 5 shows an article 42 according to one embodiment of the invention. The article 42 has a surface layer 22, a barrier layer 24, an absorbent body

30, fastening tabs 26, 28 and a raised portion 40. The absorbent body 30 can be made of the same materials as has been described for the absorbent body 30 in the sanitary towel 1 according to Figures 1-2 or the absorbent body 30 in the panty liner 36 according to Figures 3-4. The surface layer 22, the barrier layer 24, and the fastening tabs 26, 28 can be made of the same materials as has been described for the surface layer 22, the barrier layer 24, and the fastening tabs 26, 28 in connection with the sanitary towel according to Figures 1-2. The raised portion 40 can be made of the same sort of absorption material as the absorbent body, although combinations of these materials are of course possible within the scope of the invention.

Figure 6 shows a section along the line VI-VI through the article in Figure 5. On the underside 20 of the article, that is to say on its liquid barrier layer 24, there are fastening members in the form of a layer 34 of pressure-sensitive adhesive covering the entire surface. Alternatively, the fastening member 34 can have another shape, for example oval, rectangular, lines, points or the like. Arranged over the adhesive layer 34 there is a releasable protective layer 38. The protective layer 38 is removed by the user before placing the sanitary towel in the underwear. Other fastening members such as hook-and-loop, snap-fasteners, friction material, gripping members or the like are of course also possible.

Figures 7-11 show articles according to alternative embodiments of the invention. What distinguishes these articles from those described in connection with figures 1-6 is that the fastening member 34 is arranged in another way. The liquid-barrier backing layer 24 is advantageously able to breathe. Such a breathable backing layer 24 can, for example, be made of an SMS (spunbond-meltblown-spunbond) material or a breathable plastic film, for example comprising polyethylene. Such a plastic film is described in EP 283 200. If the breathability of the backing layer 24 is to be used, the underside 20 of the absorbent article cannot be completely covered by a vapour-tight fastening member 34. In Figures 7 and 8, the fastening member



34 is therefore arranged in three areas 34a, 34b, 34c, with intermediate exposed areas of the backing layer 24. Figures 9 and 11 show absorbent articles where the fastening areas 34a and 34c are arranged only at the wider end portion of the article and on the fastening tabs 26, 28. It is of course possible to conceive of application patterns for the fastening member other than those shown in the figures. For example, the fastening member can be arranged in a continuous point pattern, a net pattern or similar pattern which allows gas and vapour to pass through the backing layer 24.

- 10 The fastening member preferably consists of adhesive, but it can also comprise mechanical fastening arrangements such as hook-and-loop, snap-fasteners, friction coatings, gripping members or the like.

Figure 10 shows an embodiment in which a breathable fastening film has been applied across the whole of the underside 20 of the article so that the adhesive coating functions as a combined barrier layer and fastening member.

Figures 12 and 13 show a sanitary towel 50 according to an embodiment of the invention. The sanitary towel 50, for instance of the type shown in Figures 1 and 2, has fastening tabs 56, 58 which consist of separate pieces of material. The fastening tabs 56, 58 have edge portions 52, 53, 54, 55 wherein a first edge portion 52, 54 is firmly secured along the long sides 2, 4 of the backing layer 24 on the protruding edge portions of the sanitary towel 50.

25 The difference between the sanitary towel 50 and the sanitary towel 1 in Figures 1 and 2 is that the fastening tabs 56, 58 are arranged such that they from the start extend in over the backing layer 24, past the longitudinally extending centre line 14 so that the fastening tabs 56, 58 at least partially overlap. However, the fastening tabs 56, 58 have a width in the transverse direction of the sanitary towel 50 which is less than the width of the sanitary towel 50. Further, it is evident from Figure 12 that the fastening tabs 56, 58 are primarily arranged at the second, rear end portion 12. In Figure 12 it can

also be seen that the fastening tabs 56, 58 do not extend over the full length of the sanitary towel 50 something which would have been less advantageous since it would have detracted from the desired discretion which is a reason for wearing thongs. Accordingly, it is suitable to arrange the fastening tabs 56, 58 at a distance of 0.5 to 2 cm from the rear end side 8 whereby a soft, discrete outer end portion is obtained. In addition, it is suitable to arrange the fastening tabs 56, 58 at a distance from the front end side 6 since the adaptability to different sizes and shapes of thongs otherwise would be diminished. Naturally, it is possible to arrange fastening tabs along all of the length of the article although such an embodiment is normally less preferred.

On the sanitary towel 50 fastening means 34 in the form of two rectangular areas 34a, of pressure-sensitive adhesive is arranged on the liquid barrier layer 24 on the first end portion 10 and on the second end portion 12. In order to facilitate positioning of the sanitary towel 50 in the thong, it is advantageous not to arrange pressure-sensitive adhesive on the area of the liquid barrier layer 24 which coincides with the fastening tabs 56, 58. Furthermore, by not arranging pressure-sensitive adhesive in said area, the sanitary towel 50 in accordance with this embodiment has the particular advantage of being able to move freely in relation to the thong and accordingly to more freely adapt to the user's body movements. In Figures 12 and 13 it can be seen that the fastening tabs 56, 58 are also provided with fastening means 34c. The fastening means 34c, are arranged on the side of the fastening tabs 56, 58 which faces the backing layer 24. Thus, the inner fastening tab 58 will be attached to the thong and the outer fastening tab 56 will be attached to the side of the fastening tab 58 which faces away from the backing layer 24. In accordance with this embodiment, the fastening means 34c, consist of friction material, for instance elastic foam material which is advantageous since the material in thongs often consists of fragile materials and, for this reason, could be damaged or destroyed by a fastening means consisting of an adhesive layer which would attach more firmly to the cloth.

Another advantage with a sanitary towel 50 in accordance with this embodiment is that the fastening tabs 56,58 will exhibit a certain degree of rigidity as an additional effect of the friction material something which will facilitate the application of the sanitary towel 50 in the thong. Naturally, it is possible to arrange the fastening tabs in the reverse order to what is shown in the Figures. Consequently, the fastening tab 56 which is arranged outermost in Figures 12 and 13 can instead be attached to the thong and the fastening tab 58 which in the Figures is attached to the thong can be attached outermost.

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Evidently, it is possible to produce an article of the kind described in connection with Figures 12 and 13 without fastening means since the sanitary towel 50 when worn in thongs will conform to the body of the user and will acquire a longitudinally arcuate configuration. As has been previously mentioned, such longitudinal curving creates tensional forces in the fastening tabs 56,58 on the outside of the thong, whereby the fastening tabs 56,58 press against the thong so that the thong material is clamped between the fastening tabs 56,58 and the liquid barrier layer 24. In this manner, the sanitary towel 50 is kept in place in the thong and the use of special fastening means such as, for instance, pressure-sensitive adhesive, hook-and-loop fasteners, press studs, friction coatings, clasps or the like can be avoided.

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A further embodiment of the invention is shown in Figures 14 and 15 which show a panty liner 60, for instance of the kind shown in Figures 3 and 4. The difference between the panty liner 60 and the one which is shown in Figures 3 and 4 is that it has fastening tabs 66,68 which are arranged in a manner similar to that described in relation to the sanitary towel in Figures 12 and 13. In Figure 14 it can be seen that the fastening tabs 66, 68 extend over a smaller part of the total length of the panty liner 60 than the fastening tabs 56, 58 which are shown in Figure 12. The fastening tabs 66, 68 are arranged substantially only at the second end portion 12. The fastening tabs 66, 68

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extend in over the liquid barrier layer 24 with the free second end portions 63,65 meeting at the longitudinal centre line 14 of the panty liner 60.

Moreover, the liquid barrier layer 24 of the panty liner 60 is provided with  
5 fastening means 34 in the form of rectangular areas 34a, 34b, of pressure-sensitive adhesive arranged parallel to the longitudinal centre line 14 of the panty liner 60 in the first end portion 10 and in the second end portion 12. In order to facilitate application of the panty liner 60 in the thong, it is advantageous not to arrange pressure-sensitive adhesive on the portion of  
10 the liquid barrier layer 24 which coincides with the fastening tabs 66, 68. Furthermore, by not arranging pressure-sensitive adhesive on said portion, the panty liner 60 in accordance with this embodiment has the particular advantage of being able to move freely in relation to the thong and thereby more freely adapt to body movements. In Figure 14 it can be seen that the  
15 fastening tabs 66, 68 are also provided with fastening means 34c of pressure-sensitive adhesive. The fastening means 34c are arranged on the side of the fastening tabs 66, 68 which faces the backing layer 24.

The areas with pressure-sensitive adhesive are protected before use,  
20 preferably by a detachable protection layer 69 (not shown in Figure 14). In the embodiment shown in Figures 14 and 15, the protection layer is release coated on both sides whereby it serves as a protection layer both for the fastening means 34a, 34b on the liquid barrier layer 24 and for the fastening means 34c on the fastening tabs 66, 68.

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The fastening means can, for example, have the shapes which are shown in Figures 12 and 14 but it is also possible to conceive of other shapes, as has been described in connection with Figures 2 and 4. Naturally, it is also possible to conceive other application patterns than those shown in figures  
30 12 and 14.

A further embodiment of the invention, which is not shown in the Figures, is to arrange the fastening tabs so that they extend in over the liquid barrier layer 24 ending at a distance from the longitudinal centre line 14 so that the second, free edge portions 53, 55 borders on an intermediate exposed portion of the backing layer 24.

It is also possible that the fastening tabs 56,58; 66,68 consist of a laminate comprising a more rigid material. The more rigid material is preferably arranged between two covering layers which are joined at the periphery of the more rigid material. The more rigid material may consist of a sheet of rigid plastic material, cardboard, board or the like.

It is obviously possible to combine the features of different embodiments. Accordingly, the shape of the fastening tabs in Figures 1-11 can, for instance, be applied to articles of the kind shown in Figures 12-15. Furthermore, it is optional to provide the articles with a protrusion such as the one described in connection with Figures 5 and 6.

The invention must not be seen as being limited to the above embodiments. These serve only to illustrate the invention. Characteristics of different embodiments can be combined with each other within the scope of the invention. For example, the different fastening arrangements can of course be combined with each other.

## CLAIMS

- 5
1. Absorbent article, such as a sanitary towel, an incontinence protector or a panty liner, which article is intended to be worn together with thong underwear, has an essentially elongate shape with a longitudinal direction and a transverse direction, an upper side (18) and an underside (20), two parallel long sides (2, 4), two fastening tabs (26, 28; 56,58; 66,68), a first end portion (10) intended to be directed forwards on the user and a second end portion (12) intended to be directed rearwards on the user, the first end portion (10) being wider than the second end portion (12), **characterized in that** the second end portion (12) of the article being at most 40 mm wide and that the fastening tabs (26,28; 56,58; 66,68) are arranged at the long sides (2, 4) of the article at least in the second end portion (12), said fastening tabs (26, 28; 56,58; 66,68) being designed for securing the article in the thong.
- 10
2. Absorbent article according to Claim 1, wherein the fastening tabs (26, 28) have an essentially rounded contour.
- 20
3. Absorbent article according to either of the preceding claims, wherein the fastening tabs (26, 28; 56,58; 66,68) comprise an adhesive fastening member (34).
- 25
4. Absorbent article according to any of Claims 1 to 3, wherein the fastening tabs (26, 28; 56,58; 66,68) comprise a mechanical fastening member (34).

5. Absorbent article according to any of the preceding claims, wherein the fastening tabs (26, 28; 56,58) are arranged to be secured against each other.
- 5 6. Absorbent article according to any of the preceding claims, wherein the fastening tabs (26, 28; 56,58; 66,68) comprise a soft material layer, such as a nonwoven or foamed plastic.
7. Absorbent article according to any one of the preceding claims,  
10 wherein the first end portion (10) is provided with a fastening arrangement (34).
8. Absorbent article according to Claim 7, wherein the fastening arrangement (34) comprises an adhesive fastening member.
- 15 9. Absorbent article according to Claim 7 or 8, wherein the fastening arrangement (34) comprises a mechanical fastening arrangement.
10. Absorbent article according to Claims 7 to 9, wherein the fastening  
20 arrangement (34) has a special shape.
11. Absorbent article according to any one of the preceding claims, wherein the article has a raised portion (40).
- 25 12. Absorbent article according to any one of the preceding claims, wherein the article has inwardly curved side edges (2, 4).
13. Absorbent article according to any one of the preceding claims, wherein the width of the second end portion (12) is 20-40 mm.
- 30 14. Absorbent article according to any one of the preceding claims, wherein the width of the second end portion (12) is 20-30 mm.

15. Absorbent article according to any one of the preceding claims, wherein the length of the article is 150 mm or less.
- 5 16. Absorbent article according to any one of the preceding claims, wherein a layer of liquid-impermeable, vapour-permeable material is arranged on the underside (20) of the article.
- 10 17. Absorbent article according to any one of the preceding claims, wherein the fastening tabs (26,28; 56,58; 66,68) are made of hydrophobic material.
- 15 18. Absorbent article according to any one of the preceding claims, wherein the fastening tabs (56,58; 66,68) are formed from separate pieces of material and wherein each fastening tab (56,58; 66,68) has an edge portion (52,54; 62,64) which generally coincides with a corresponding edge portion on the long side (2,4) and wherein the fastening tabs (56,58; 66,68) and the edge portions on the long sides (2,4) are joined within the coinciding edge portions with the fastening tabs (56,58; 66,68) being directed towards each other with their free, second edge portions (53,55; 63,65) extending in over the underside (20) of the article.
- 20 19. Absorbent article according to Claim 18, wherein the second end portion (12) is provided with a fastening arrangement (34).
- 25 20. Absorbent article according to Claim 19, wherein the fastening arrangement (34) comprises an adhesive fastening member.
- 30 21. Absorbent article according to Claim 19 or 20, wherein the fastening arrangement (34) comprises a mechanical fastening member.



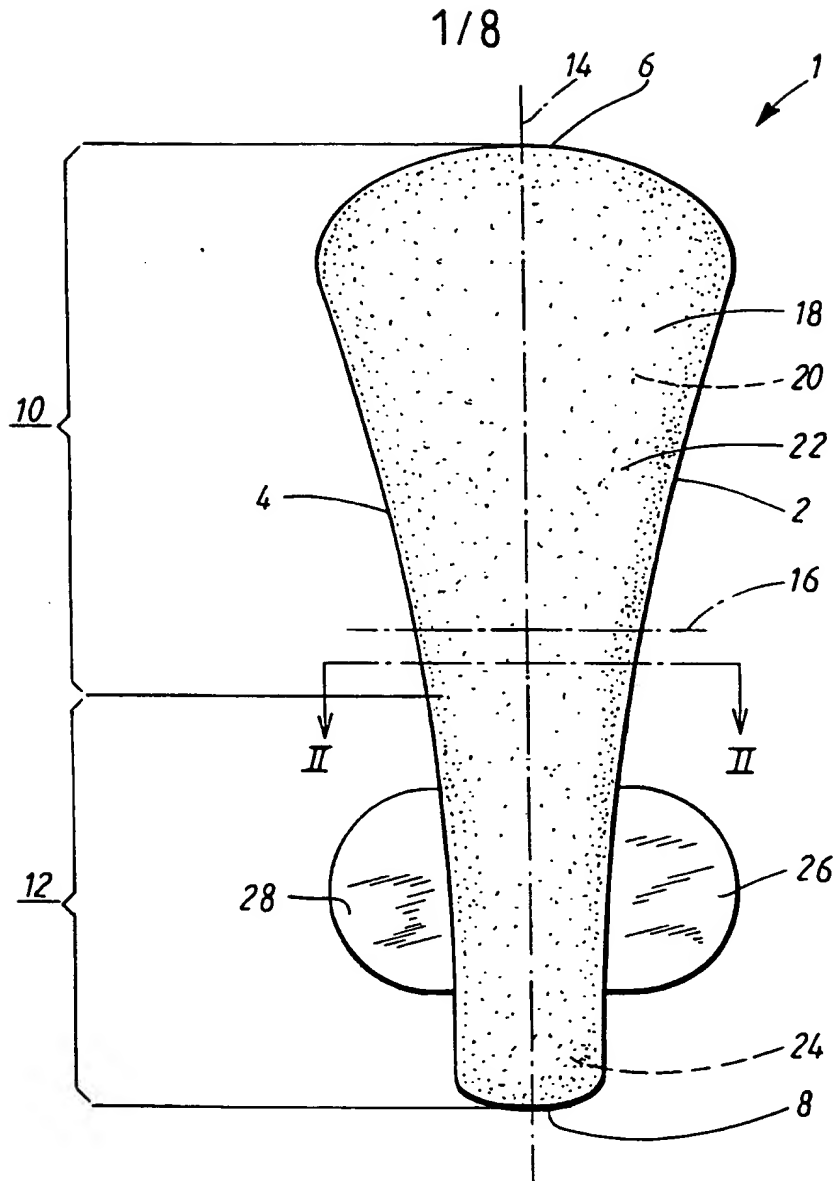


FIG. 1

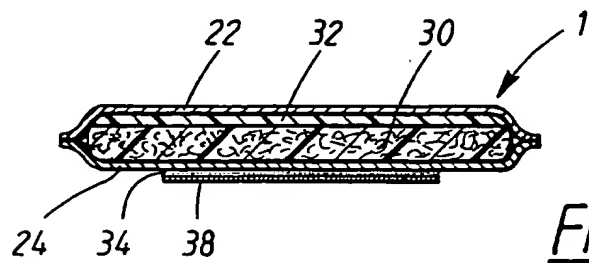


FIG. 2

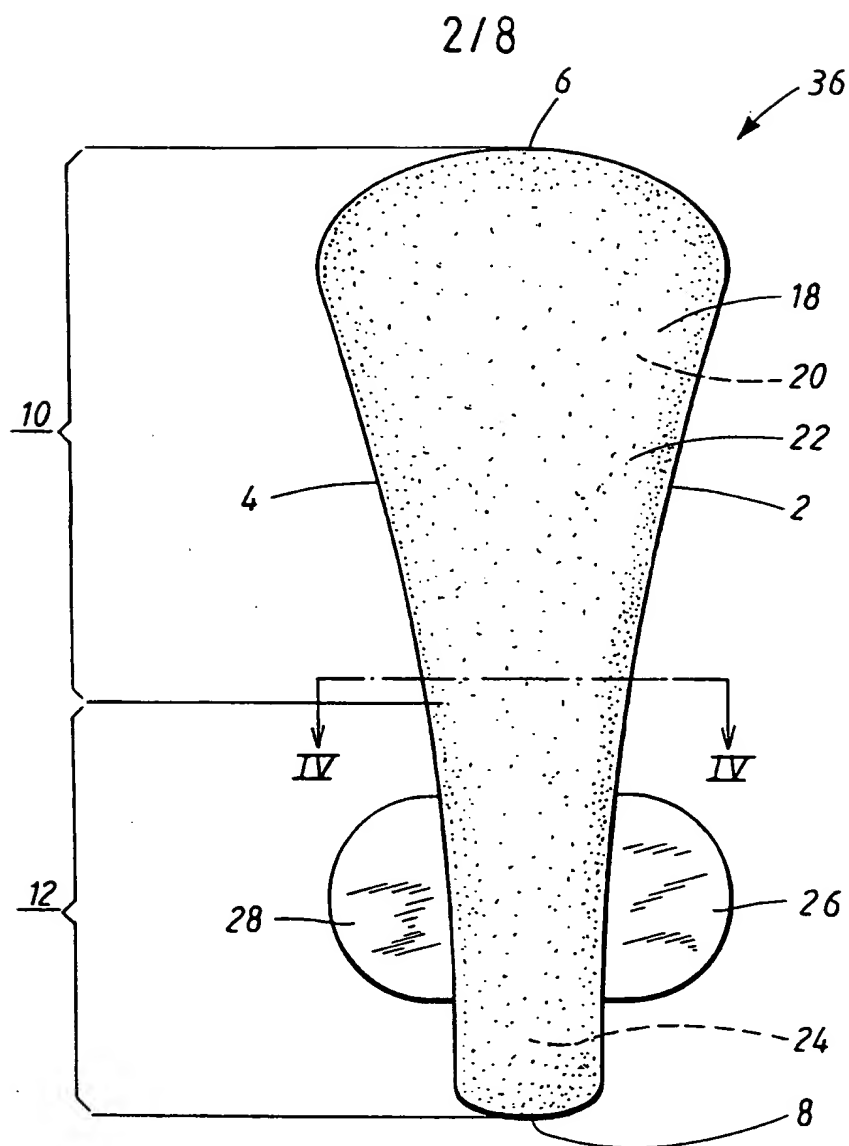


FIG. 3

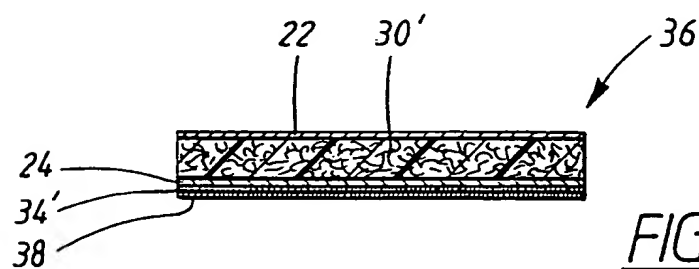


FIG. 4

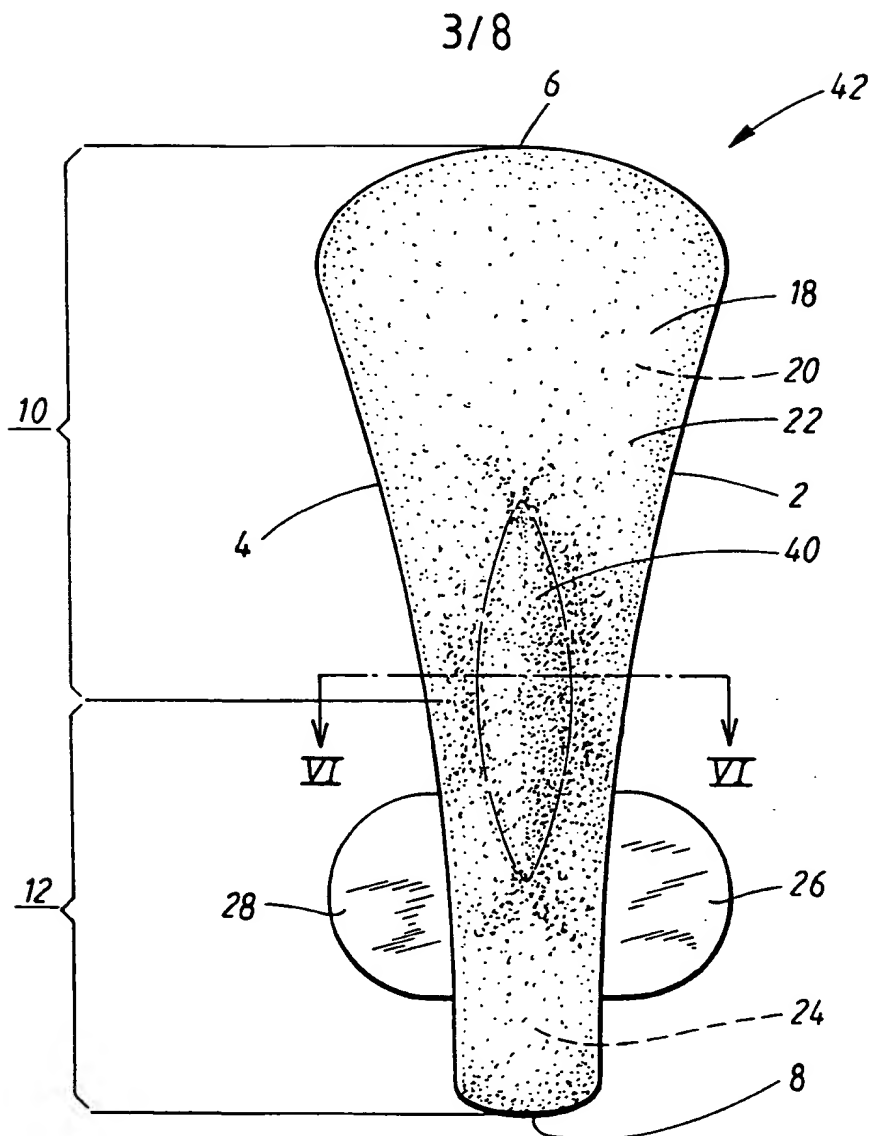


FIG. 5

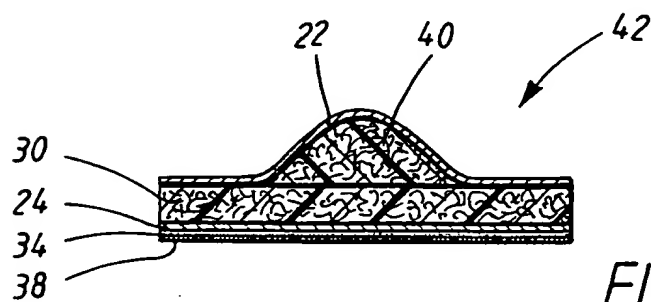


FIG. 6

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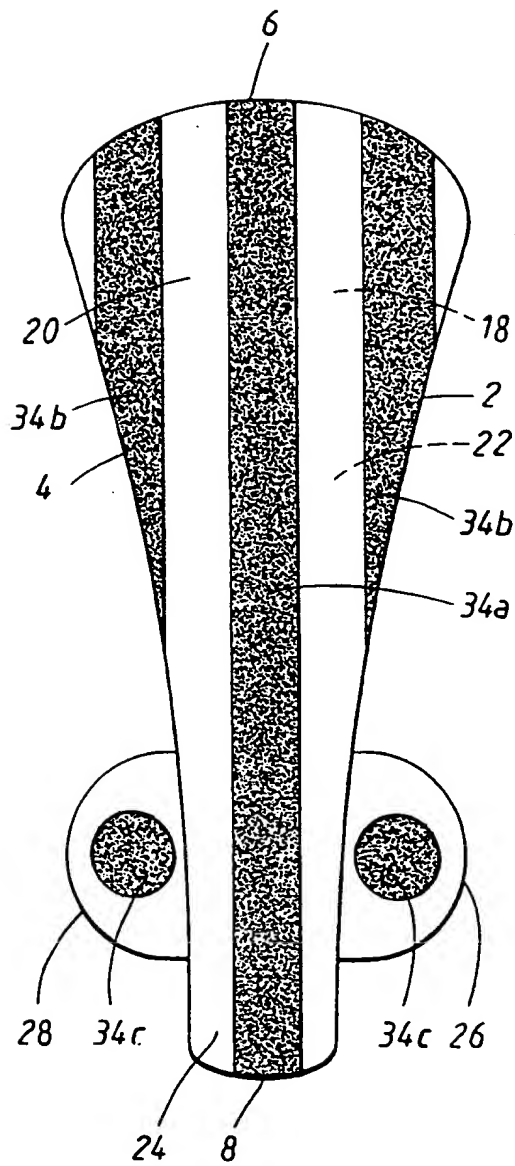


FIG. 7

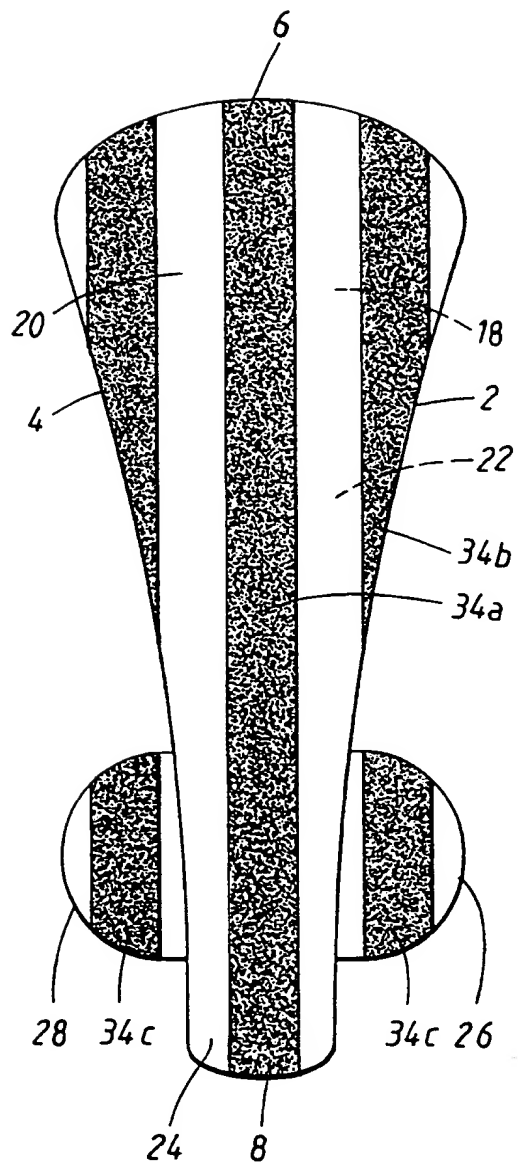
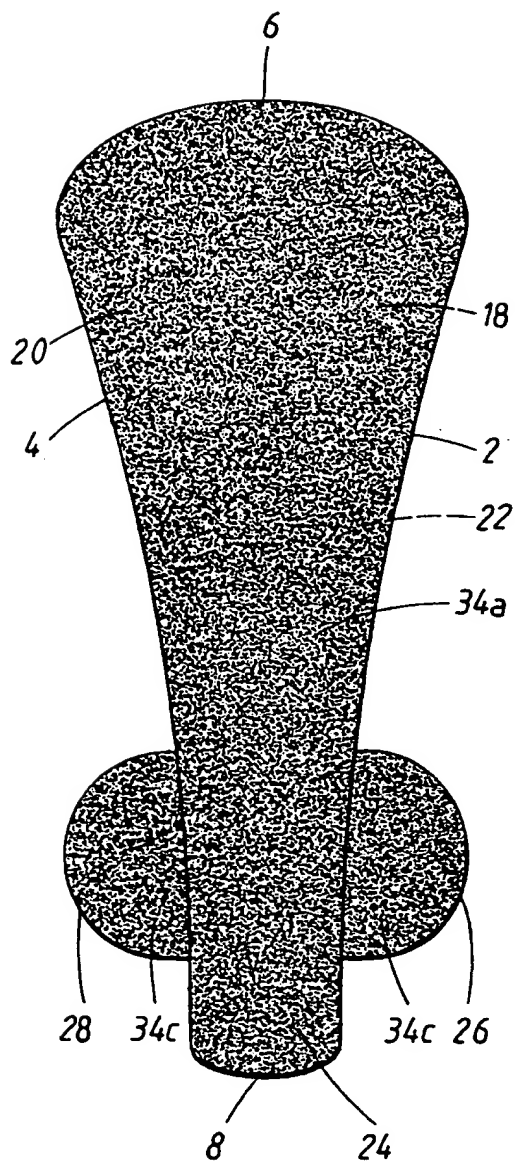
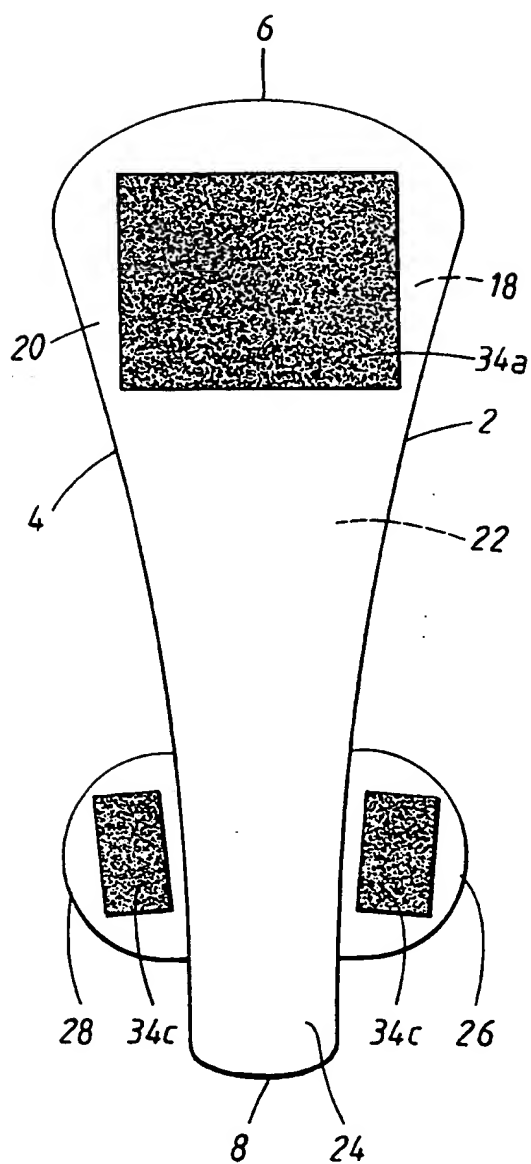
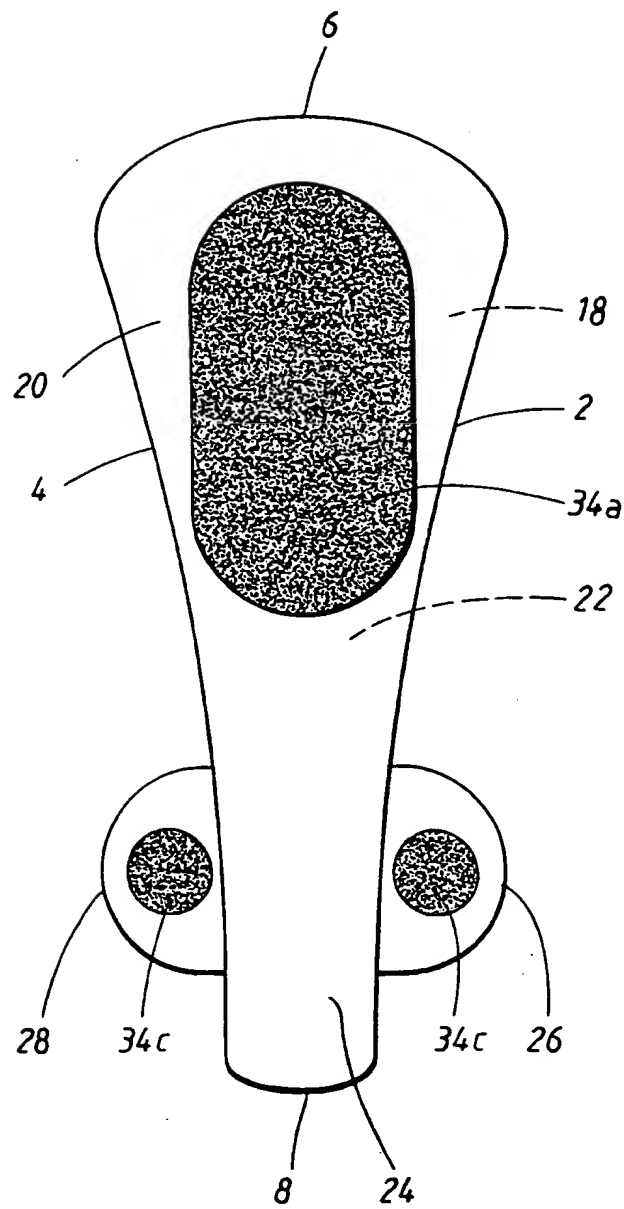


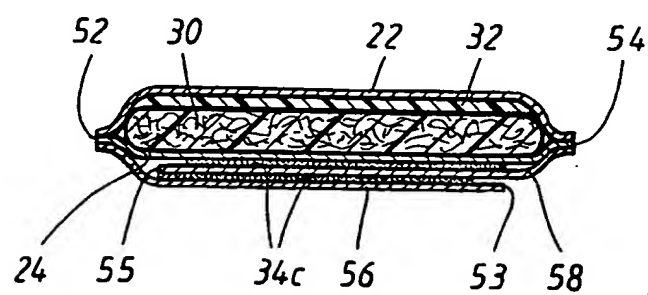
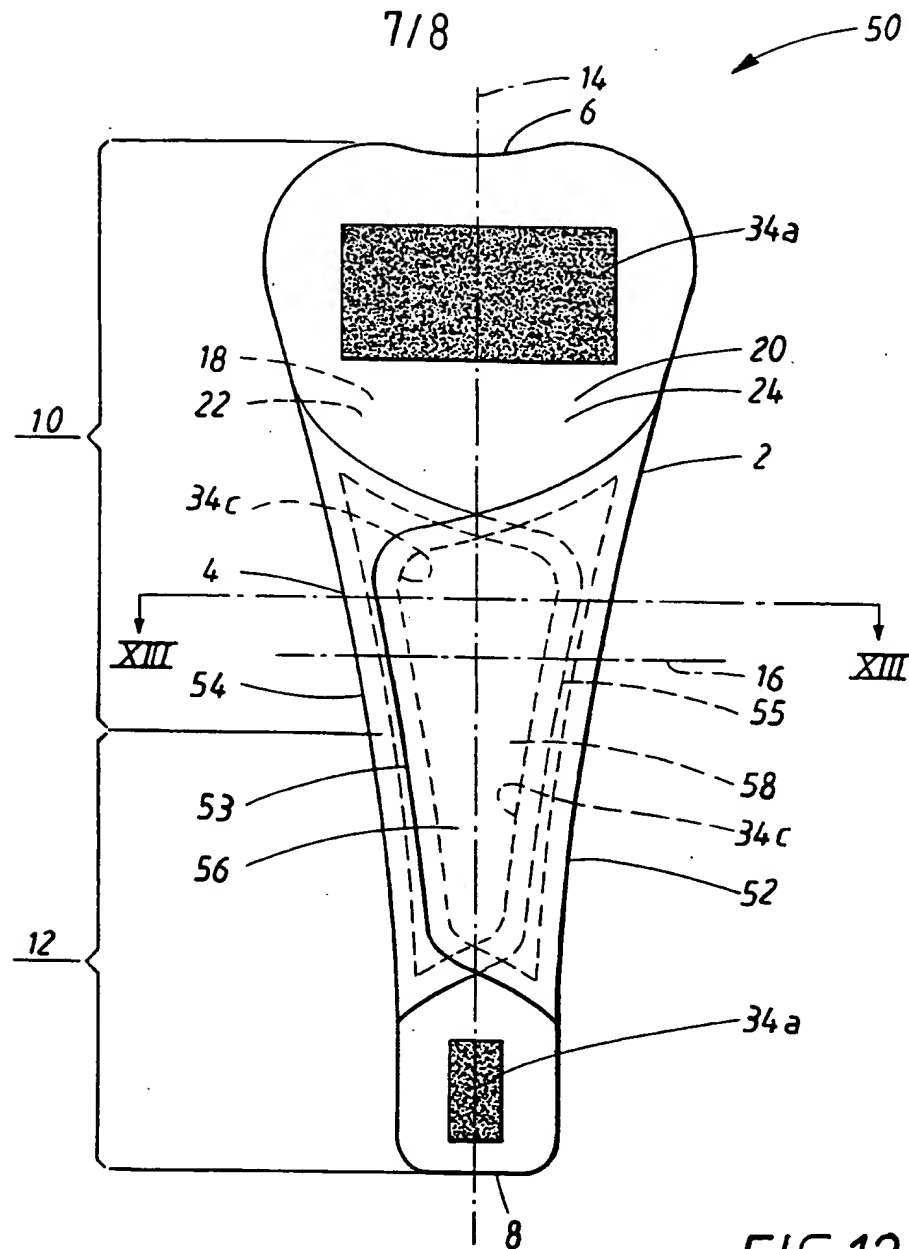
FIG. 8

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FIG. 10FIG. 9

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FIG. 11



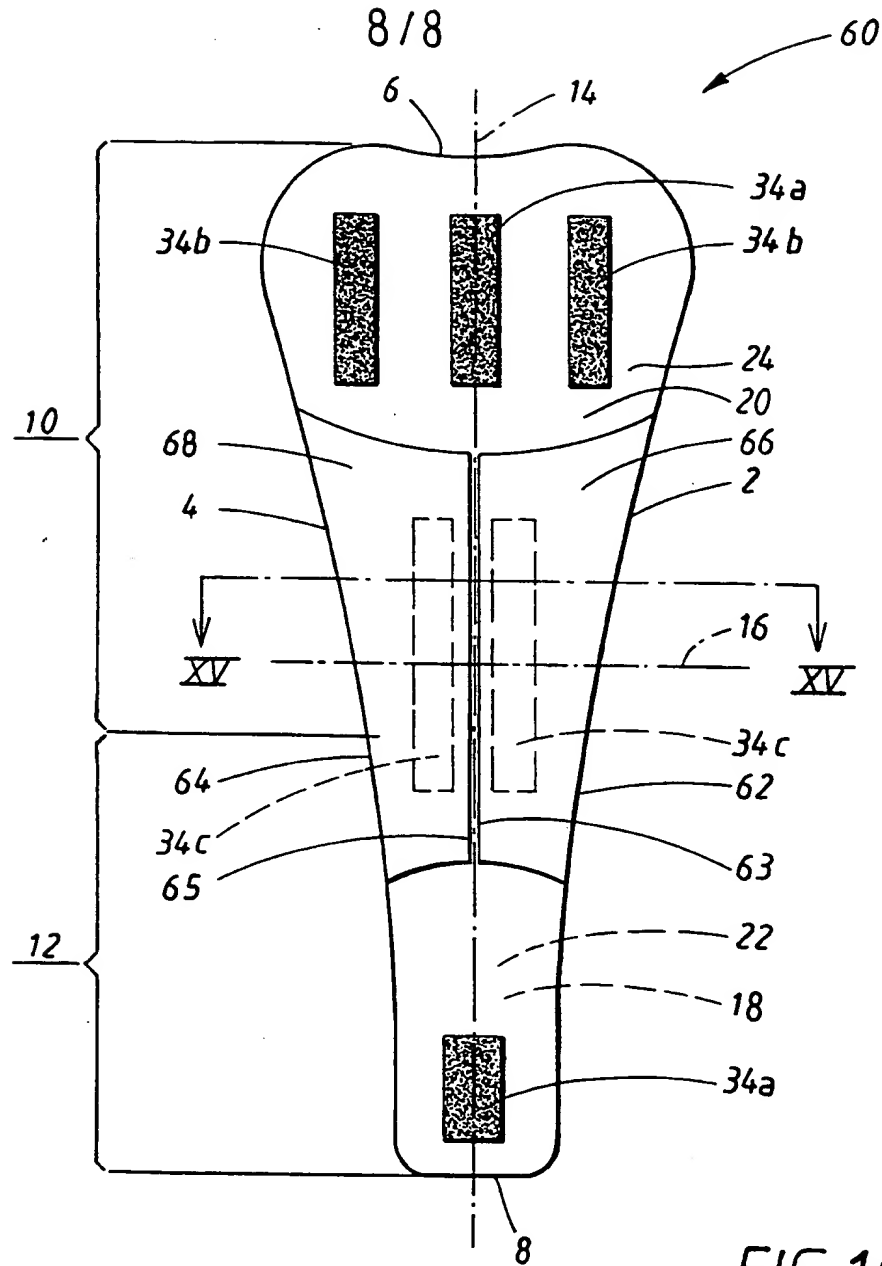


FIG. 14

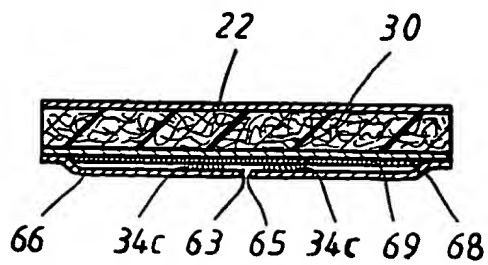


FIG. 15



# INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 00/00948

## A. CLASSIFICATION OF SUBJECT MATTER

IPC7: A61F 13/15, A61F 13/58

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: A61F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 9739713 A1 (DARBY, KAMELA, J.), 30 October 1997 (30.10.97)  --	1-21
A	US 5713886 A (DAVID P. STURINO), 3 February 1998 (03.02.98)  --	1-21
A	US D394503 S (LINA PERRINI), 19 May 1998 (19.05.98)  -- -----	1-21

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

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Date of the actual completion of the international search

31 August 2000

Date of mailing of the international search report

05 -09- 2000

Name and mailing address of the ISA/

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# INTERNATIONAL SEARCH REPORT

Information on patent family members

08/05/00

International application No.

PCT/SE 00/00948

Patent document cited in search report			Publication date	Patent family member(s)		Publication date
WO	9739713	A1	30/10/97	AU	2680697 A	12/11/97
				CA	2252381 A	30/10/97
				EP	0920292 A	09/06/99
				US	5683373 A	04/11/97
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US	5713886	A	03/02/98	NONE		
-----						
US	394503	S	19/05/98	NONE		
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